COMMONWEALTH OF MASSACHUSETTS
HEALTH POLICY COMMISSION

TECHNICAL APPENDIX C
QUALITY AND ACCESS: PREVENTABLE HOSPITALIZATIONS IN LOW-INCOME COMMUNITIES

ADDENDUM TO COST TRENDS JULY 2014 SUPPLEMENT

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Summary

This technical appendix describes the Commission's approach to measuring the rates of preventable hospitalizations in Massachusetts by quartile of community income.

We conducted this analysis by applying measures of preventable hospitalization developed by the Agency for Healthcare Research and Quality (AHRQ) to data from the Hospital Inpatient Discharge Database from the Massachusetts Healthcare Data Consortium (MHDC) and the American Community Survey (ACS) from the US Census Bureau.

1 Analysis of Preventable Hospitalizations in Low-Income Communities

1.1 Data and Sample

We used the MHDC's discharge database for the calendar year 2012 and the ACS for the calendar years 2008-2012 for our analysis. The sample included patients that met AHRQ's measure definition and resided in Massachusetts.

1.2 Measures of Preventable Hospitalizations

To calculate rates of preventable hospitalization, the HPC used AHRQ's Prevention Quality Indicators (PQIs), a set of measures that can be used with inpatient discharge data to identify the quality of ambulatory care. This analysis used version 4.5 of the PQIs, released in May 2013.[i] The different PQI measurements used in this analysis were:

Chronic conditions:

1. PQI 1—Diabetes Short-term Complications Admission Rate
2. PQI 3—Diabetes Long-term Complications Admission Rate
3. PQI 5—Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate
4. PQI 7—Hypertension Admission Rate
5. PQI 8—Heart Failure Admission Rate
6. PQI 13—Angina Without Procedure Admission Rate
7. PQI 14—Uncontrolled Diabetes Admission Rate
8. PQI 15—Asthma in Younger Adults Admission Rate
9. PQI 16—Lower-Extremity Amputation among Patients with Diabetes Rate

Acute conditions:
1. PQI 10—Dehydration Admission Rate
2. PQI 11—Bacterial Pneumonia Admission Rate
3. PQI 12—Urinary Tract Infection Admission Rate

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[i] The CDC's analysis does an adjustment by age and gender on the basis of the 2000 standard population.

Each measure consists of a numerator (the number of hospitalizations) and a denominator (the size of the relevant population). The denominators for all PQIs, except for PQI 5—COPD or Asthma in Older Adult and PQI 15—Asthma in Younger Adults, are individuals age 18 or older. We created a composite for all individuals with either COPD or Asthma by adding the numerators for PQI 5 and PQI 15 together and using a denominator consisting of all individuals age 18 or older. In addition, we created a composite of preventable hospitalizations from diabetes by summing the rates across PQIs 1, 3, 14, and 16. Following specifications from AHRQ, the HPC also constructed a composite of preventable hospitalizations for all conditions.

1.3 Analytic approach

Because patient income was not available in the discharge database, the HPC's analyzed differences in preventable hospitalizations by community income (zip-code level) rather than by patient income.

In order to construct community -level measures that were adjusted by age and sex, the HPC calculated rates for each PQI within cells defined by zip code, gender, and age group (18-19, 20-24, 25-29, …, 80-84, 85+) and then produced the adjusted rate by weighting the rate for each demographic group within zip code with a standard set of weights based on the demographic profile of the state as a whole.

Numerators (the number of preventable hospitalizations by PQI, zip code, gender, and age group) were derived from MHDC's discharge database. Denominators (the size of the population by zip code, gender, and age group) came from the ACS' 2008-2012 Massachusetts estimates.

Community income was defined as the median income for the patient's zip code tabulated area (ZCTA). Zip codes were ordered according to their median income, and quartiles were defined so that each quartile contained one-fourth of the population, based on five year estimates from the 2012 American Community Survey.